

**Daniel A Orlikowski**

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**Education:**

North Carolina State University, Raleigh, NC, United States, attended from 08/1995 to 05/2000,  
Ph.D., 05/2000.

University of Heidelberg, Germany, Heidelberg, Germany, attended from 10/1994 to 07/1995,  
07/1995.

North Carolina State University, Raleigh, NC, United States, attended from 05/1991 to 05/1994,  
B.S. physics, 05/1994.

**Work History:**

LLNL, Livermore, CA, United States, physicist, from 07/2001 to Present.

Harvard University, Cambridge, MA, United States, Post. Doc., from 05/2000 to 05/2001.

**Awards and Honors:**

PDRP Award, 2007.

PDRP Award, 2007.

Directorate, 2005.

## **Publications:**

### Refereed Journal Articles:

Jarmakani, H; McNaney, JM; Kad, B, *et al.* "Dynamic response of single crystalline copper subjected to quasi-isentropic, gas-gun driven loading", *Mat. Sci. Eng. A-Struct.*, **463**, 249-262, (2007).

Martin, LP; Patterson, JR; Orlikowski, D, *et al.* "Application of tape-cast graded impedance impactors for light-gas gun experiments", *J. Appl. Phys.*, **102**, (2007).

R. T. Krone, L. P. Martin, J. R. Patterson, D. Orlikowski, J.H. Nguyen. "Fabrication and characterization of graded impedance impactors for gas gun experiments from hot pressed magnesium and polyethylene powders", *Mat. Sci. Eng. A-Struct.*, (2007).

Orlikowski, D; Soderlind, P; Moriarty, JA. "First-principles thermoelasticity of transition metals at high pressure: Tantalum prototype in the quasiharmonic limit", *Phys. Rev. B*, **74**, (2006).

Nguyen, JH; Orlikowski, D; Streitz, FH, *et al.* "High-pressure tailored compression: Controlled thermodynamic paths", *J. Appl. Phys.*, **100**, (2006).

Moriarty, JA; Benedict, LX; Glosli, JN, *et al.* "Robust quantum-based interatomic potentials for multiscale modeling in transition metals", *J. Mater. Res.*, **21**, 563-573, (2006).

Farber, DL; Krisch, M; Antonangeli, D, *et al.* "Lattice dynamics of molybdenum at high pressure", *Phys. Rev. Lett.*, **96**, (2006).

Menon, S., A.D. Del Genio, Y. J. Kaufman, D. Koch, R. Bennartz, N. Loeb, and D. Orlikowski. "Analyzing signatures of aerosol-cloud interactions from satellite retrievals and the GISS GCM to constrain the aerosol indirect effect.", *J. Geophys. Res.*, (2006).

Lu G, Orlikowski D, Park I, Politano O, Kaxiras E. "Energetics of hydrogen impurities in aluminum and their effect on mechanical properties", *Phys. Rev. B*, **65**, (2002).

Orlikowski D, Mehrez H, Taylor J, Guo H, Wang J, Roland C. "Resonant transmission through finite-sized carbon nanotubes", *Phys. Rev. B*, **63**, (2001).

Nardelli MB, Fattebert JL, Orlikowski D, Roland C, Zhao Q, Bernholc. "Mechanical properties, defects and electronic behavior of carbon nanotubes", *Carbon*, **38**, 1703-1711, (2000).

Orlikowski D, Sagui C, Somoza AM, Roland C. "Two- and three-dimensional simulations of the phase separation of elastically coherent binary alloys subject to external stresses", *Phys. Rev. B*, **62**, 3160-3168, (2000).

Orlikowski D, Nardelli MB, Bernholc J, Roland C. "Theoretical STM signatures and transport properties of native defects in carbon nanotubes", *Phys. Rev. B*, **61**, 14194-14203, (2000).

Orlikowski D, Nardelli MB, Bernholc J, Roland C. "Ad-dimers on strained carbon nanotubes: A new route for quantum dot formation?", *Phys. Rev. Lett.*, **83**, 4132-4135, (1999).

Orlikowski D, Sagui C, Somoza A, Roland C. "Large-scale simulations of phase separation of elastically coherent binary alloy systems", *Phys. Rev. B*, **59**, 8646-8659, (1999).

C. Sagui, D. Orlikowski, A. Somoza, and C. Roland. "Three-dimensional simulations of Ostwald ripening with elastic effects", *Phys. Rev. E*, **58**, R4092-R4095, (1998).

R.T. Krone, L.P. Martin, J.R. Patterson, D. Orlikowski and J. H. Nguyen. "Fabrication and characterization of graded impedance impactors for gas gun experiments from hot pressed magnesium and polyethylene powders", *Mat. Sci. Eng. A-Struct.*, .

Lawrence Livermore National Laboratory Reports:

F. H. Streitz, J. H. Nguyen, D. Orlikowski, R. Minich, J. A. Moriarty, N. C. Holmes. "Rapid Solidification of Metals using Dynamic Compression, Final report 02-ERD-033", UCRL-TR-209674, (2005).

D. Orlikowski. "A simple, low pressure strength model for U-6wt.%Nb", UCRL-JRNL-155643, (2003).

Books:

*Mechanical Properties and Electronic Transport in Carbon Nanotubes*, ( , 1999).

Published Conference Proceedings:

John A. Moriarty, James N. Glosli, Randolph Q. Hood, John E. Klepeis, Daniel A. Orlikowski, Per Söderlind, and Lin H. Yang. "QUANTUM-BASED ATOMISTIC SIMULATION OF METALS AT EXTREME CONDITIONS", TMS, (New Orleans, LA, 03/

/2008), ().

Alfredo A. Correa Eric Schwegler John E. Klepeis. "A Steinberg-Guinan model for High-Pressure Carbon, Diamond Phase", Shock Compression of Condensed Matter -2007, (HI, 06/25/2007-06/31/2007), *AIP Conf. Proc.*, () .

Jeffrey H. Nguyen J. Reed Patterson Roger Minich L. Peter Martin Neil C. Holmes. "New experimental capabilities and theoretical insights of high pressure compression waves", Shock Compression of Condensed Matter -2007, (HI, 06/16/2007-06/30/2007), *AIP Conf. Proc.*, () .

Martin, LP; Nguyen, JH; Patterson, JR, *et al.* "Tape casting technique for fabrication of graded-density impactors for tailored dynamic compression", Symposium on Materials Research at High Pressure held at the 2006 MRS Fall Meeting, (Boston, MA, 11/ /2006), *MATER RES SOC SYMP P*, **987**, pp 45-50, .

Jarmakani, H; McNaney, JM; Kad, B, *et al.* "Dynamic response of single crystalline copper subjected to quasi-isentropic, gas-gun driven loading", Symposium on Processing and Mechanical Response of Engineering Materials held at the 2006 TMS Annual Meeting, (San Antonio, TX, 03/ /2006), *Mat. Sci. Eng. A-Struct.*, **463**, pp 249-262, .

J. A. Moriarty, L. X. Benedict, J. N. Glosli, R. Q. Hood, D. A. Orlikowski, M. V. Patel, P. Soderlind, F. H. Streitz, M. Tang and L. H. Yang. "Quantum-Based Atomistic Simulation of Transition Metals", SHOCK05, 14th APS Topical Conference on Shock Compression of Condensed Matter, (Baltimore, MD, 07/ /2005), *AIP Conf. Proc.*, **845**, pp 403-408, .

H. Jarmakani, J. M. Mc Naney, M. S. Schneider, D. Orlikowski, J. H. Nguyen, B. Kad, and M. A. Meyers. "Dynamic Response of Copper Subjected to Quasi-Isentropic, Gas-Gun Driven Loading", SHOCK05, 14th APS Topical Conference on Shock Compression of Condensed Matter, (Baltimore, MD, 07/ /2005), *AIP Conf. Proc.*, **845**, pp 1319-1322, .

John A. Moriarty, Lorin X. Benedict, James N. Glosli, Randolph Q. Hood, Daniel A. Orlikowski, Mehul V. Patel, Per Soderlind, Frederick H. Streitz, Meijie Tang, and Lin H. Yang. "Robust Quantum-Based Interatomic Potentials for Multiscale Modeling in Transition Metals", 2005 MRS Spring Meeting, Symposium EE Linking Length Scales in the Mechanical Behavior of Materials, (San Francisco, CA, 03/ /2005), *Mater. Res. Soc. Symp. Proc.*, **882E**, pp EE4.7, .

Daniel Orlikowski, Per Soderlind, John A. Moriarty. "Shear modeling: thermoelasticity at high temperature and pressure for tantalum", Plasticity 2005, (Kauai, HI, 01/ /2005), *Int. J. Plasticity* , .

Daniel Orlikowski, Per Soderlind and John A. Moriarty. "Thermoelasticity at High Temperatures and Pressures for Ta", MMM-II, Second International Conference on Multiscale Materials Modeling, (Los Angeles, CA, 10/ /2004), *Conference Proceedings of Multiscale Materials Modeling II*, **na**, pp 112, .

Jeffrey H. Nguyen, Daniel Orlikowski, Frederick H. Streitz, John A. Moriarty, Neil C. Holmes. "Specifically Prescribed Dynamic Thermodynamic Paths and Solidification Experiments", 13th APS Topical Conference on Shock Compression of Condensed Matter, (Portland, OR, 07/ /2003), *AIP Conf. Proc.*, **706**, pp 1225-1230, .

D. Orlikowski, C. Sagui, A. Somoza, and C. Roland. "Three-Dimensional Simulations of Phase Separations in Model Binary Alloy Systems with Elasticity", ( , / /1998), *Mat. Res. Soc. Symp. Proc.*, **481**, pp 255, .

#### News Related Articles:

Arnie Heller. New Routes to High Temperature and Pressures, *Science and Technology Review*, 03/ /2007, 23.

Jeffrey H. Nguyen, Daniel Orlikowski, Frederick H. Streitz, John A. Moriarty, and Neil C. Holmes. High-pressure tailored compression: Controlled thermodynamic paths, *Virtual Journal of Nanoscale Science & Technology*, 07/31/2006, .

Anne M. Stark. Researchers measure high-pressure lattice dynamics of molybdenum NR-06-03-11, *LLNL public affairs news release*, 03/24/2006, NR-06-03-11.

#### **Presentations:**

#### Invited Talks:

"Temperature and Strength of Tantalum upto 10 Mbar", Conference/Workshop, 10/2007.

"New experimental capabilities and theoretical insights of high pressure compression waves", Conference/Workshop, 07/2007.

"A high temperature and pressure, multi-scale strength model for transition metals", Conference/Workshop, 06/2007.

Other Presentations:

"Ignition Capsule Design with high-density carbon ablator for national ignition facility", Oral Presentation, APS Plasma conf., Orlando, FL, United States, 11/12/2007-11/16/2007.

"An implemented multi-scale strength model based on atomistics for transition metals", Oral Presentation, AIRAPT, Catania, Italy, 09/16/2007-09/21/2007.

"Atomistic and first-principles based multiscale strength models: actinides and transition metals", Oral Presentation, JOWOG 32 mat., Los Alamos, NM, United States, 06/ /2007.

"High-pressure Carbon Strength Model: first guess", Oral Presentation, APS Shock Compression of Condensed Matter, Hilo, HI, United States, 06/ /2007.

"A multi-scale, atomistic-based strength model for tantalum", Oral Presentation, APS March Meeting 2007, Denver, CO, United States, 03/ /2007.

"A multi-scale, atomistic-based strength model for tantalum", Oral Presentation, International Symposium on Plasticity 2006, Halifax - Nova Scotia, Canada, 07/ /2006.

"Recent Advances in Tailored Dynamic Compression", Oral Presentation, American Physical Society, Baltimore, MD, United States, 03/ /2006.

"A pressure-induced phase-transition from liquid to solid in Water", Oral Presentation, APS Shock Compression of Condensed Matter, Baltimore, MD, United States, 08/ /2005.

"Off-Hugoniot Compression of Tantalum to Megabar Pressures", Oral Presentation, APS Shock Compression of Condensed Matter, Baltimore, MD, United States, 08/ /2005.

"Dynamic Response of Copper Subjected to Quasi-Isentropic, Gas-Gun Driven Loading", Oral Presentation, 14th APS Topical Conference on Shock Compression of Condensed Matter, Baltimore, MD, United States, 08/ /2005.

"tailored dynamic thermodynamic paths: implications for phase transitions and planetary isentropes", Oral Presentation, AIRAPT, Karlsruhe, Germany, 06/ /2005.

"High-pressure liquid-solid phase transition and meltline for Water", Oral Presentation, AIRAPT; Karlsruhe, Germany, 06/ /2005.

"Thermoelasticity at High Temperatures and Pressures: Molybdenum and Tantalum", Oral Presentation, AIRAPT, Karlsruhe, Germany, 06/ /2005.

**Professional Leadership and Service:**

Conferences/Workshops Organized:

14th APS Topical Conference on Shock Compression of Condensed Matter, Baltimore, MD, United States, 08/ /2005, Session Chair.

Appointment to Editorial and Referee Roles:

*Phys. Rev. Lett.*, Reviewer or Referee, from 2006 to Present

*High Pressure Res.*, Reviewer or Referee, from 2004 to Present

*AIP Conf. Proc. Vol 845, Shock Compression of Condensed Matter*, Reviewer or Referee, from 2003 to 2006

**Patents and Copyrights Issued:**

Functionally formed composite with arbitrary prescribed density profile, Jeffery H. Nguyen Daniel Orlikowski Frederick H. Streitz Eamon Loughane Jeffrey van Lue. Patent 04/2003.